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The Mining Journal

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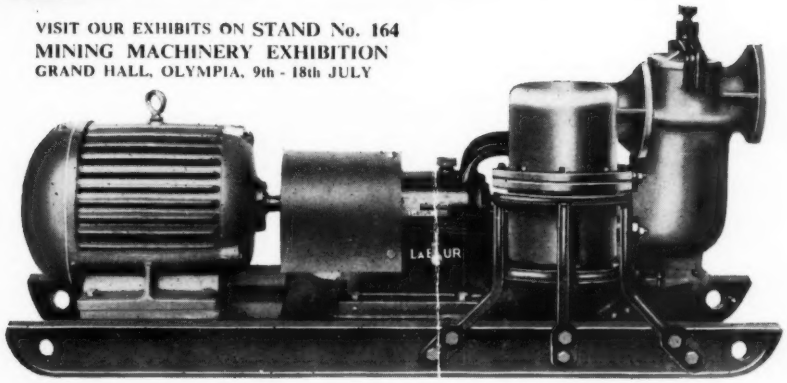

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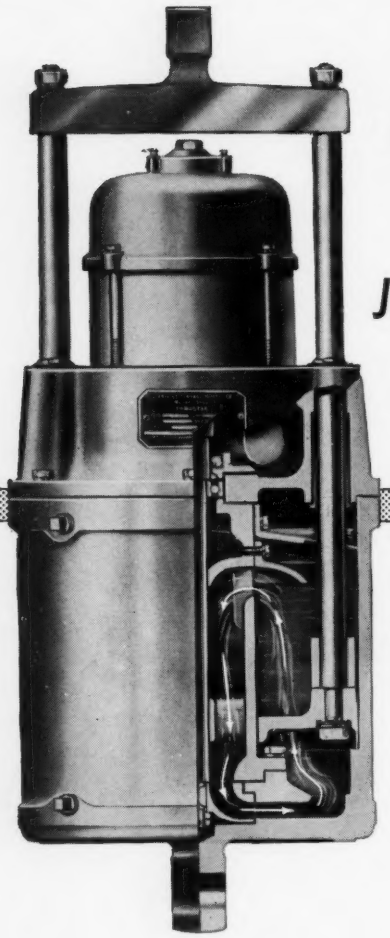

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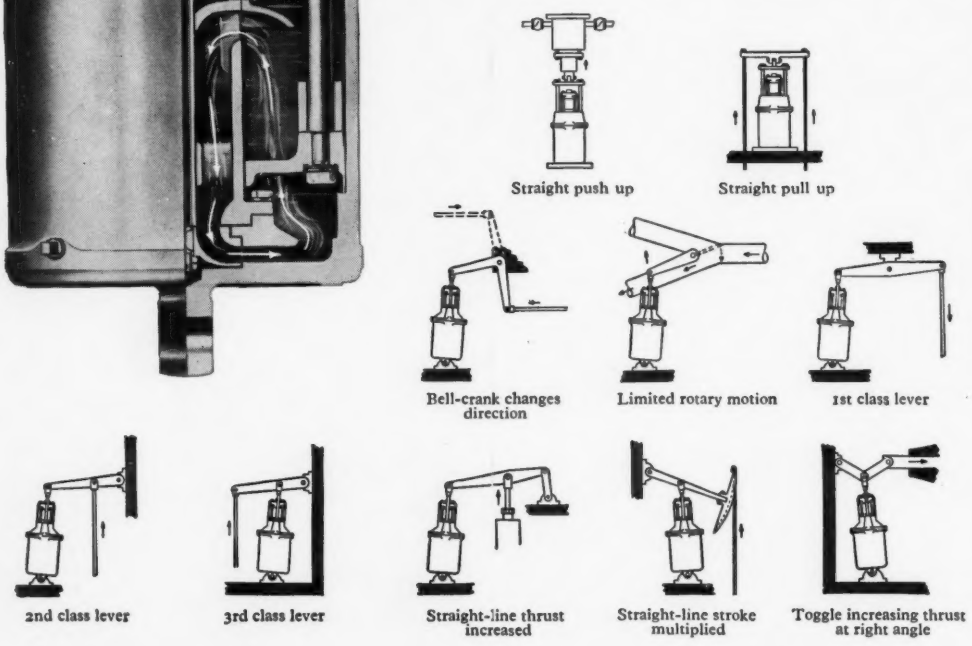

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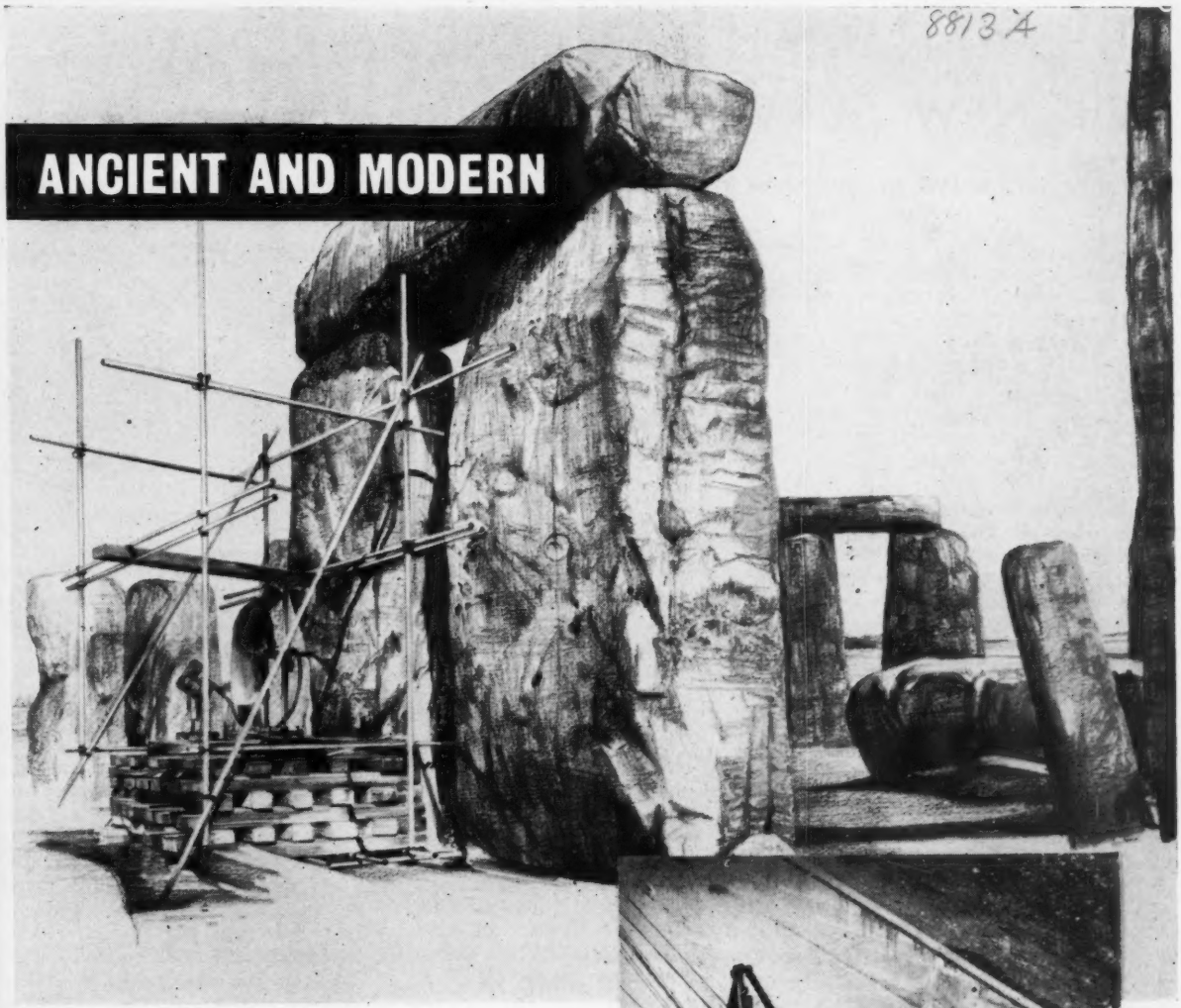
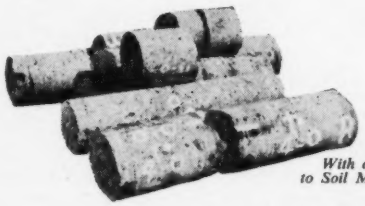
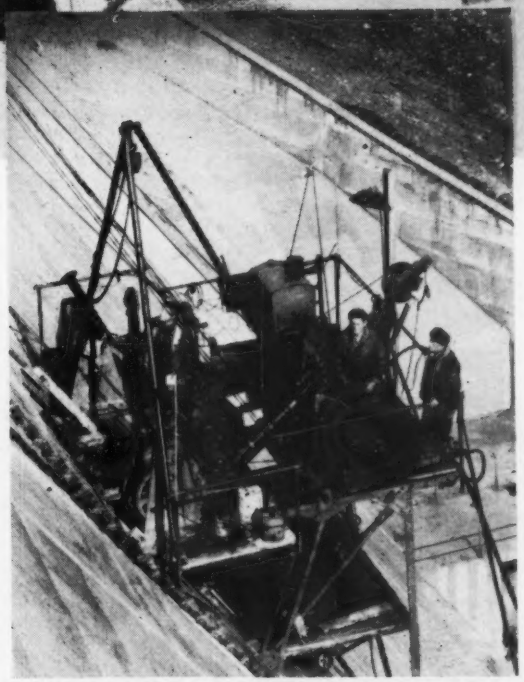


Illustration by permission of the Ministry of Works



With acknowledgements to Soil Mechanics Limited

In addition to the more usual mineral prospecting and mining work, our rock drilling equipment has been used in one phase of the reconstruction of Stonehenge, and in the sampling of concrete dam faces



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BUSY CANADIAN AERO CREWS READY FOR NEW SURVEY ASSIGNMENTS

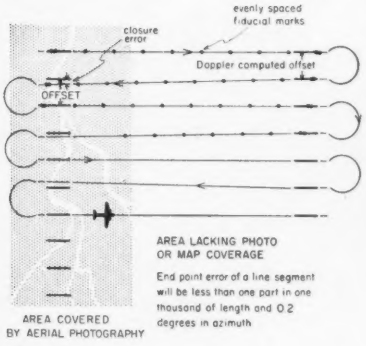
Air magnetic surveys in progress in Italy, Turkey, England, Venezuela, Alaska and at home

Canadian technicians are carrying forward airborne magnetometer surveys now in many new areas of the globe. Crews of Canadian Aero Service Ltd., Ottawa, worldwide air survey company, are at work in Italy, Turkey, England, Venezuela, Alaska and western Canada. Canadian Aero affiliates are also busy in Australia, Korea, Thailand, and areas in Africa and the Middle East.

One technically interesting example is the recently completed airborne magnetometer survey covering 30,000 square miles of northern and coastal areas of the Spanish Sahara in which Canadian Aero crews participated. The survey aircraft was Doppler-guided over the featureless terrain. All flying was done in one month.

The magnetic maps were delivered to the Spanish Government earlier in June. These maps will show basement depths and structures. Sixteen participating oil companies will use the maps to help plan their applications for exploration rights.

This survey over previously unmapped terrain could not have been completed, say the air surveyors, without the aid of RADAN® Doppler guidance. This tested new navigational aid for airborne exploration requires no ground stations. Air photos are not needed. Survey times are much reduced. Surveys over jungle, desert, and other featureless terrain can be done quickly and at lower costs. The Doppler guidance costs about $1 to $2 per mile.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OFFSET
AREA LACKING PHOTO OR MAP COVERAGE
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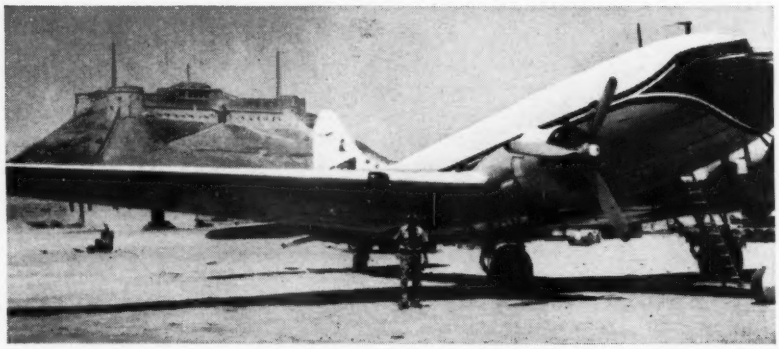
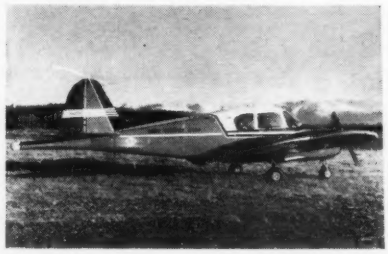


The survey aircraft at an advance base for the 40,000-mile Doppler-guided survey over desert terrain.

Other air magnetic surveys for major oil companies are being advanced by Canadian Aero crews in Venezuela, Italy, and Turkey. In these areas, maps or photos are available, and the terrain permits visual navigation by the skilled mapping crews.

In the United Kingdom, Canadian Aero crews will be at work on a major survey project shortly. On this survey, Decca Navigation will aid the plane positioning. The Gulf high sensitivity airborne magnetometer, Mark III, will be the survey instrument. Completion of the project is scheduled for October.



PIPER APACHE: Low cost exploration "workhorse", now at work in the Far East.

In Korea and Thailand, still other exploration crews of Canadian Aero affiliates are sighting in on mineral targets. They are using a Piper Apache, chosen for its low-cost workhorse performance. In the Middle East, the company's available aircraft includes a specially modified B-17. It has photographed more than 1,000,000 square miles in that area, from heights of 30,000 ft. or more.

Closer to home, Canadian Aero crews are flying the S-55 helicopter in detailed, tree-top height surveys with the Canadian Aero electromagnetic detector, Gulf magnetometer, and Mt. Sopris scintillation counter. Other crews are engaged in airborne magnetic surveys in several areas in Canada.

In Canada alone, Canadian Aero has more than a million miles of airborne magnetometer survey experience with the Gulf high sensitivity instrument. This includes major surveys in the Peace River area, and other areas of interest in western Canada.

Representatives of Canadian Aero will be glad to provide complete information on the experience and capabilities of the company. The company's crews are ready to undertake new assignments anywhere in Canada or abroad. Find out how these "on location" teams can cut mobilization costs for your survey project.

Canadian Aero's fully integrated mapping services include airborne magnetometer surveys, geophysical interpretation, aerial photography, photo interpretation, photo mosaics, pipe line surveys, relief models, and topographic plans. It employs the Gulf magnetometer, and RADAN®, Shoran, Lorac, Raydist and Decca plane-positioning systems.

Canadian Aero's representative in Calgary is John R. Prendergast, 718 Eighth Avenue, S. W., telephone Amherst 3-4730. Its headquarters are at 348 Queen Street, Ottawa, telephone Central 5-1404. In England, its representative is William P. DesLaurier, and its office is at 20 Albert Embankment, London S. E. 11.

The Mining Journal

London, July 3, 1959

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DISPUTE IN THE PRINTING INDUSTRY

The dispute in the printing industry, the duration of which at present cannot be foreseen, is severely hampering the production of all British newspapers and periodicals, other than national daily and Sunday newspapers. In consequence, the size of *The Mining Journal* must, unfortunately, be substantially reduced until conditions are back to normal.

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Mineral Processing Research and Development

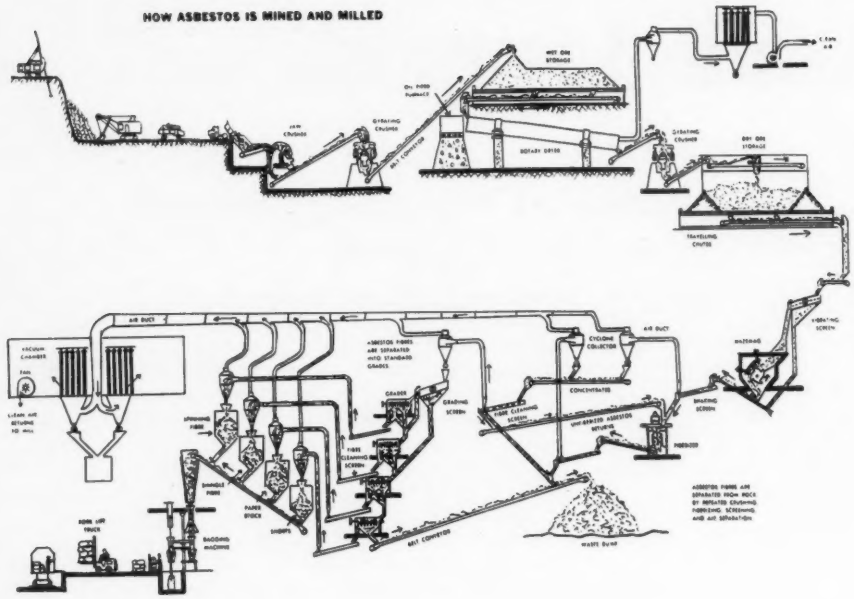
RESEARCH on mineral processing will be a major activity of the New Warren Spring Laboratory at Stevenage, Herts, which was officially opened by the Rt. Hon. Viscount Hailsham, Q.C., on June 29. Built and equipped by the Department of Scientific and Industrial Research at a cost of approximately £630,000, it stands on a site of 28 acres and can readily be extended as required.

Warren Springs is in some respects the successor of the former Fuel Research Station at Greenwich, but its terms of reference are vastly different. The Council for Scientific and Industrial Research consider that the Fuel Research Station has largely fulfilled the aims in view when it was set up, and that current needs in the field of fuel technology are for the most part catered for by researches in progress elsewhere. Only two programmes have therefore been transferred from Greenwich to Warren Springs, namely research on atmospheric pollution and on the Fischer-Tropsch process for making oil from coal. The opportunity was accordingly taken to embark on programmes not covered by existing D.S.I.R. stations. The current research programme at Warren Springs therefore covers two new subjects, namely mineral processing and chemical engineering research.

The Mineral Processing Division aims to serve the mining industry in Britain and overseas by developing methods of beneficiation of hitherto unworked deposits, by effecting improvements in processes employed in the treatment of ores and minerals, and by developing processes for the extraction of mineral or metal products from waste or dump materials. The equipment of the laboratories includes pilot-scale facilities designed to house mineral processing plant suitable for the treatment of ores at rates up to 1,000 lb. per hour. The question as to how far the new laboratories meet the need for a centre for advanced research in mineral processing to serve the Commonwealth cannot be adequately discussed in this unavoidably abridged issue. A more comprehensive article on Warren Springs will appear when conditions in the printing industry return to normal. Meanwhile it can at least be stated that a step has been taken which was sadly overdue.

At least half the effort of the Mineral Processing Division is to be devoted to long-term research, which initially will include a study of grinding in the presence of additives such as surface active agents ; the kinetics of bubble attachments to mineral surfaces ; and a study of the behaviour of mineral particles in a high-tension field. There will also be sponsored research on specific ores, but contracts will only be accepted where the results of an investigation are likely to have economic value. A considerably cheaper rate will be charged if the sponsors will leave the Division free to publish the results of the investigation.

Most of the requests for sponsored work will, of course, come from overseas. An Overseas Mineral Processing Advisory Committee has therefore been set up to advise on the selection and priorities of the programme. Contacts with Commonwealth countries are already available through the Overseas Geological Surveys, which, incidentally, are expected to be among the largest sponsors, while there is also established machinery for liaison between the D.S.I.R. and research organizations in the Dominions and elsewhere. Apart from these established channels, direct contacts are being established between Warren Springs and mining companies overseas.



Schematic representation of the flow of material in the £36,000,000 mine and mill of Lake Asbestos of Quebec Ltd., at Black Lake, Quebec

Lake Asbestos Opencast Mine and Mill

by

JOHN GRINDROD

EXPECTED to contribute approximately 10 per cent to Canada's production of asbestos, and 7 per cent to the free world's supply, a new asbestos mine and mill to produce about 100,000 tons of fibre a year from 1,350,000 tons of ore, has been developed at Black Lake, Quebec, by Lake Asbestos of Quebec Ltd., a wholly-owned subsidiary of American Smelting and Refining Company, New York.

About $36,000,000 have been invested in this project, which is claimed to be unique in that the ore body once lay under a lake which was the key feature in the drainage system of a populated area. Shake-down runs at the mill, which cost $9,200,000, began on July 1, 1958, and the mill is now operating on a fully commercial basis.

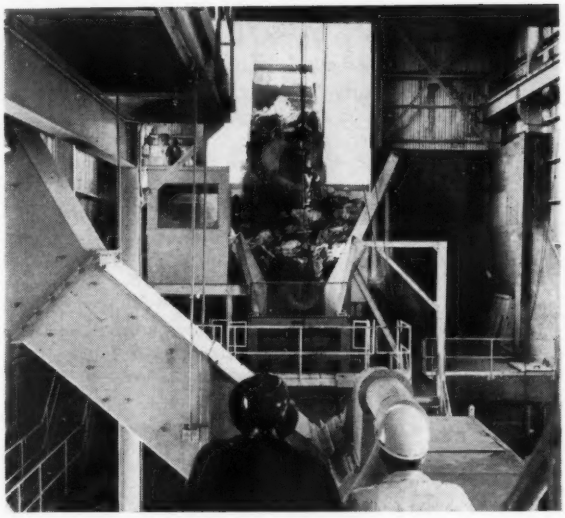
The Province of Quebec already produces about 60 per cent of the world's asbestos fibre. Just north of Black Lake, which was about two miles long by half-a-mile wide, is the town of the same name, Black Lake (population 5,000), and four-and-a-half miles further north is the town of Thetford Mines (population 20,000). In this Thetford Mines—Black Lake mine district, the production of asbestos is the principal industry. There are seven mines and mills in the area, and huge tailings piles give evidence of long years of working these deposits. Another principal mine district is some forty-five miles to the south at Asbestos.

Since asbestos deposits have been mined on either side of Black Lake for many years, it was a reasonable assumption to expect that the ore extended under the lake. Until a few years ago, the tremendous engineering problems and costs involved in developing such submarine deposits precluded exploration under the 500-acre lake. However, the success of the draining and dredging operations to recover iron ore from deposits in the Steep Rock area in southern Ontario, near the Minnesota border, made the Black Lake potential seem more favourable to Canadian engineers. In consequence, the area covered by Black Lake was staked on January 1, 1948, and, with mining rights granted by the Crown, the first test hole was drilled in August of that year. Exploration was carried out during the winter months by drilling with rigs set on the ice. At this time, the United Asbestos Corporation Ltd. was formed, and funds were obtained by public subscription to carry on the work.

A 6 ft. by 6 ft. shaft was started on the east side of the lake for underground exploration in 1950, and this was completed in the spring of 1951 at a depth of 570 ft. from the shaft collar. This shaft, of which 40 ft. now stands above dry ground, was originally located in the lake, and was gradually connected to the shore by filling in with material excavated in this phase of the mining exploration. Underground development followed as tunnels and drifts were drilled to explore this deposit, known as the " A " ore body. Another ore body, known as the " C " ore body, was located beneath a granite island on the west side of the lake. A third ore body is indicated in the centre of the lake, but this needs further development, and only the two ore bodies " A " and " C " figure in the present plans.

United Asbestos, most of whose shares are owned by Canadians, had invested $1,000,000 to $2,000,000 in exploration operations, but did not have the capital needed to bring the property into full production. Seeking financial and engineering aid it brought the development to the attention of American Smelting and Refining Company (ASARCO). Following checks on the exploration already done, further drilling and actual milling of ore to determine the yield, value and type of equipment needed, ASARCO exercised the option offered by United Asbestos in 1954. By this time, some 120,000 ft. of diamond drilling, part surface and part underground, had been carried out, and 30,000 tons of ore had been mined for pilot-plant testing. The existence of deposits sufficient for twenty years opencast operations had been established.

Under the terms of the option ASARCO would provide the necessary funds for development of the property and



Ton-size chunks of asbestos ore being dumped into a chute, leading to the primary crusher at the Black Lake mill

operate it on a profit-sharing basis. ASARCO was to develop the deposit ; equip the property with a mill to treat 4,000 tons of ore per day ; receive 75 per cent of the proceeds until the capital investment was recovered, when the proceeds were to be split according to a formula based on the grade of ore being mined and milled ; and have complete freedom of operation during the life of the ore body.

Construction Aggregates Corporation of Chicago, the company carrying on the Steep Rock dredging, was granted the contract for the dredging, and this called for the construction of a suction dredge to remove the silt from the lake bottom, and to drain the lake prior to the start of opencast mining of the "A" and "C" ore bodies. Opencast working was selected over underground mining on the basis of the geology of the area and other factors. After about twenty years of opencast working, underground methods will probably be necessary. Whichever method of mining was adopted, however, it was necessary to remove the mud and silt to guard against contamination of the asbestos by organic matter, that would char at the high-curing temperature employed in asbestos processing and degrade the product.

Not only is the Black Lake project the first to employ suction dredging to uncover asbestos ore, but it is also unique in the complexity of the hydraulic problems involved, since the area is fairly populous and has an annual rainfall of 44 in. Furthermore, the material on the side of the lake is soft, and has to be carefully terraced to protect the mining pit from mud slides.

With a capacity of about 35,000 to 45,000 g.p.m., the main 200-ton, 30-in. dredge pump, powered by a 6,000 h.p. motor, has been supplemented by a 30-in. booster suction pump, powered by a 6,000 h.p. motor located on the shore. Another half-mile along the pipeline there has been a second booster station with a 30-in. pump powered by a 2,500 h.p. motor. Other equipment used has included three barges, two tugs, a 700-ton pontoon line, a shoreline pipe 39,000 ft. long, a unique underwater rock crusher, a fleet of eighteen 22-ton trucks and six tractors. The rate of removal to the spoil area has depended on the material dredged, whether sand, loose mud or boulder clay. The dredge could pump 1,400,000 cu. yds. per month in very soft overburden. The minimum has been 400,000 cu. yds. per month, and the average 1,000,000 cu. yds. per month. The material's average composition has been about 17 per cent solids, so that the quantity of slurry passing through the pipeline has been about 35,000 g.p.m. to 45,000 g.p.m.

Dredging was scheduled for completion early in 1959, and the total cost of the dredge and ancillary equipment has been $3,000,000. Readying the ore deposit for opencast working will have involved the removal of about 37,000,000 cu. yds. of overburden, 30,000,000 cu. yds. by dredging and pumping, and 7,000,000 cu. yds. by mechanical shovels and trucks. The enormous amount of material to be removed, the control of drainage during dredging, the need to cope with drainage problems in the area and to provide for flood control to replace the regulating effect of the lake, posed many unusual and difficult engineering problems.

By mid-1958, the lake was low enough to permit the start-up of mining and of tune-up operations in the mill. Since prevention of contamination is very important in asbestos mining and milling, the ore body must be carefully cleaned before it is blasted, crushed, and milled and this is rigorously enforced at Black Lake. Workers even have to go into compounds set aside in enclosed areas of the mill for a smoke.

One of the two ore bodies starts at about elevation 630 ft. and the other at about 670 ft. The original lake level was at 750 ft., and the final drainage level is 530 ft. Opencast operations will go down about 500 ft. and mining may then be extended another 500 ft. by underground methods. Ore reserves are currently estimated at 42,000,000 tons.

The standard method of mining is by quarrying in 40 ft. benches. Primary blast holes are drilled 6⅝ in. in diameter and are spaced at 10 ft. to 15 ft. with a burden of 20 ft. to 30 ft. Secondary blasting and block-holing is done by tractor-mounted wagon drills and by Travel drills. Ore is loaded into 25-ton capacity rear-dump trucks by 4 cu. yd. capacity shovels, and dumped into a 100-ton capacity steel hopper-type chute.

Constructed by F. H. McGraw Co. of Canada Ltd., the mill has eleven floors and is 130 ft. high. Its ultra-modern production equipment and quality control are designed to ensure superior processing and yield a high quality product. The Black Lake ore bodies are of such quality that the mill is able to produce all grades of asbestos from the longest

Wet ore travels up the conveyor from the foreground of the picture into the mill at Black Lake. The second conveyor angling down to the right, brings up dried asbestos ore for the separation of the asbestos fibres from the rock matrix

to the shortest fibres. Installed in the mill, which has a capacity of 5,000 tons of ore a day, are three miles of conveyors, five miles of aspiration lines and chutes, and 630 electric motors with a total of 7,000 h.p. Some 980,000 cu. ft. of air a minute are used in the mill and drier building.

Some of the significant features of the Black Lake mill design and processing include :— outdoor stockpiles of undried ore ; three stage crushing, drying, milling and finished fibre warehousing all in the same building ; filtering of dust from the drier exhaust ; automatic remote control of mill feed ; multi-stage fibreizers ; multi-stage graders ; special techniques for removing wood from the mill flow.

The wet rock storage pile with a normal capacity of 120,000 tons, or about one month's run of mill, permits blending of the ore from the two ore bodies, a steady supply of ore for the mill in case major repairs are scheduled for primary crushing or mining equipment, and feeding the driers at a constant tonnage, twenty-four hours a day.

Another unique feature of the Lake Asbestos mill design is that approximately 35 per cent of the original feed can be rejected to tailings after the third screening operation. This relieves the third and fourth stage milling machines of a considerable load and minimizes sand, dust and rock powder.

As a result of the experience gained from the Black Lake pioneering venture, mining and hydraulic engineers have accumulated much fresh knowledge of submarine mining. This information will be applicable to the development of other ore bodies under lakes, which may be discovered or are already known but, up to now, have been judged too difficult to exploit.

MINERAL PRODUCTION IN MADAGASCAR

Production and exports of graphite, which had been steady at between 15,000 to 16,000 tonnes over the last three years, dropped to only 11,000 tonnes in 1958, due mainly to the fact that American purchases had ceased with the end of stockpiling. British purchases likewise continued to decline, and with the exception of Metropolitan France, Germany is now to all intents and purposes the only purchaser of Madagascar graphite. There has been a change in the quality of the graphite exported—a marked preference for " first grade " at the expense of " flake ".

While production of mica has remained at about the 1957 level, exports have increased in volume, but without a corresponding increase in value (702 tonnes for 190,000,000 frs. in 1957 against 839 tonnes for 194,000,000 frs. in 1958). With the exception of Germany, who has actually increased her purchases, all other regular customers have cut their imports, and the fall in price indicated by the above figures would appear to be attributable to the fact that Germany, as the sole prospective purchaser, is more or less in a position to fix her own price.

Sales of electric quartz have become more difficult, particularly to the United States, who have practically stopped all purchases, due, it is said, to competition from Brazilian quartz (offered on the market at a very low price) and synthetic quartz. On account of these difficulties and the consequent accumulation of stocks, production has had to be curtailed and some of the workings were obliged to close down.

Production of industrial garnets and other semi-precious stones has been cut down compared with 1957 owing to a fall in demand for export.

A new company, sponsored by the Commissariat à l'Energie Atomique (C.E.A.) has recently been formed to exploit monazite sands in the south of the island. It is hoped to treat eventually up to 100,000 tonnes per year, which are expected to yield 1,500 tons of monazite, 30,000 tonnes of ilmenite, and 1,800 tonnes of zircon.

Thorium seams exploited by private undertakings under the technical control of the C.E.A. are growing in importance. The value of thorium production in 1958 undoubtedly heads the list of the island's mining products. However, figures are not disclosed, and the whole of the production is taken up by the C.E.A.

CHINA EXPANDS PRODUCTION OF IRON AND MANGANESE

In order to keep pace with the increased demands arising from the drive to increase China's output of steel to 18,000,000 tonnes this year, corresponding increases are being achieved in iron ore and manganese production.

In the province of Kiangsi, where large-scale exploitation of the iron ore deposits began only last year, and where there was a complete lack of modern equipment, the output during the first four months of this year was 450,000 tonnes, or 20 per cent above the target set, and the ore had an iron content of 40 per cent. This was accomplished by more than doubling the labour productivity, as averaged over the forty iron mines in the province, and this, in turn, was brought about by the improvization by the miners themselves of appliances for the extraction, crushing, dressing, and transport of the ore.

Similar improvization by the miners has made it possible also for the iron ore output in the province of Shansi (North China) to be tripled during the first quarter of this year, as compared with the same period of last year, and it is still increasing.

Great advances in output have been achieved also at the Tayeh iron mines, in the province of Hupeh, which is the major source of supply for the vast new integrated iron and steel works at Wuhan, and at various mines in the province of Shantung, which are required to supplement supplies from other sources to the steel centres at Anshan, Peking, and several other places.

As regards manganese ore, the major producing centres are in South China, in the autonomous region of Kwangsi Chuan. These mines also have exceeded their planned targets quite considerably during the first four months of this year, and are said to have supplied " thousands of tons " of manganese ore to the steel works at Anshan, Taiyuan, Peking, Shanghai, Tientsin, Chungking, and other places.

Large quantities of pelletized iron ore are being produced at Anshan and Penki, in north-east China, with the object of increasing the iron output and of raising the utilization rate of the blast furnaces. The first pelletizing equipment in China was produced last October, after scores of experiments, at the steel works at Anshan, where a second was put in operation at the sintering plant on May 16, and where the construction of a third will be put in hand shortly.

MINING MISCELLANY

Vast reserves of gypsum have been located in the State of Kashmir by the Geological Survey of India. These reserves, which contain 91.75 per cent of gypsum, lie in the hill ranges traversed by numerous ravines on the northern side of the River Jhelum, in the District of Baramullah. They can yield gross reserves of 25,510,000 tonnes for a depth of 100 ft., and a workable reserve of 15,310,000 tonnes for the same depth. They can be used as raw material for the manufacture of Portland cement and for the preparation of plaster of paris.

★

A French Geological Survey team arrived recently in Afghanistan under a scheme for technical aid from France.

★

The Compania Estanifera do Brasil has purchased 3,000 tons of Bolivian tin for the Volta Redonda smelter.

★

Work at the Karvasvaara iron mine in Lapland has proceeded satisfactorily and it is expected that mining operations will start in early July. The known deposits total about 1,200,000 tonnes and are expected to last ten years.

★

Iron ore deposits are reported to have been found at Bartin in Turkey, conveniently near the Karabuk Iron and Steel Works. The ore has yet to be analysed.

★

Plans for the building of a large uranium-extraction plant at Mt. Billingen, in S.W. Sweden, have been approved by the Swedish Atomic Energy Delegation. The estimated cost will be about Kr.115,000,000 (£7,900,000). The annual output of 120 tonnes is expected to meet the major part of Sweden's requirements. Its attainment will necessitate the mining of some 900,000 tonnes of ore annually. Construction of the new plant is scheduled to begin early next year and to be completed by 1964.

★

The productive capacity of the Kiruna mines in Sweden is expected to reach 12,000,000 - 13,000,000 tonnes a year by 1963. The new hoisting shaft has been designed to meet this gradual increase, as well as a possible future extension of the mine production by another 2,000,000 tonnes, after certain transportation and harbour problems have been solved.

★

Yugoslavia will open a new lead and zinc mine in September with an estimated annual capacity of 150,000 tonnes of rich ores. Situated in the Kosovo-Metohija region near the Albanian frontier, it has estimated ore deposits of at least 10,000,000 tonnes.

★

Extraction of lignite by the Ptolemais installations in Greece began on March 23. The Public Power Corporation has taken over all installations for the extraction and processing of the lignite.

The first furnace of Mt. Isa Mines Ltd.'s £A5,500,000 copper refinery at Stuart, near Townsville, Queensland, has been lit. The refinery has an initial capacity of 30,000 tons of copper a year, produced from blister copper provided by Mt. Isa Mines. It is the only major copper refinery in Australia outside Port Kembla.

★

Ghana and the U.S. have signed an agreement for the joint financing of a $300,000-aerial geophysical survey of the most important zone in Ghana.

★

A new copper and zinc mill, the first of its kind ever constructed in the Philippines, was opened recently at Bagacay on Samar Island. The mill, which is operated by Marinduque Iron Mines Agents, Inc., has a maximum milling capacity of 600 tons of ore per day.

★

With reference to the articles by Mr. Carl Hanfland in our issues of December 19 and 26, 1958, we are asked by C. Deilmann Bergbau, G.m.b.H., to state that these articles, which had not been authorized by the company, contained technical errors. In particular, it is pointed out that the sliding medium used at Auguste Victoria 7 shaft was not "Synoplast" coal tar pitch but bitumen. We are informed that in the near future the German journal *Glückauf* will contain a detailed report of Auguste Victoria 7 given by the administration of the mine together with the firm.

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Orkla Grube-Aktiebolag, the largest producer of copper pyrites in Norway with proved reserves of ore sufficient for about 15 years' production, has decided to sink a shaft in order to investigate the western extension of the orebody, which has been located by diamond drillings 2,100 ft. below the surface. The shaft will be a subvertical one from the 1,160 ft. level.

★

An American/Canadian group headed by Mr. Cyrus Eaton is to carry out an aerial search for ore in Greenland. The Cryolite Co. Oresund, of Copenhagen, and the Ungava Iron Ore Co. of Canada are reported to be co-operating.

★

Ceylon's Ministry of Industries is to obtain assistance from the U.S.S.R. for carrying out a detailed survey of the island's large deposits of iron ore. Every effort will be made to utilize all the iron ore available in Ceylon. The Ministry of Industries is reported to be considering the possibility of an integrated iron and steel works to be built in three stages. Stage 1 would be a rolling mill; Stage 2, the production of billets; and during Stage 3, pig iron would be produced from local ore. The mill, when operated on a three-shift basis, would have an output of 50,000 tons of rolled steel per annum and would consume 100,000 tons of iron ore.

COMPANY NEWS

Agents, distributors and representatives from 35 countries throughout the world recently visited Gleneagles as guests of Joy-Sullivan Ltd., of Cappielow, Greenock, providing the hotel with the most representative world gathering ever held there so far. The main purpose of this international sales conference was to introduce the overseas visitors to Joy-Sullivan's latest venture—the Air Power Division. Mr. J. C. George, chairman of Joy-Sullivan Ltd., presided, and among those who spoke were Mr. J. R. Bingham, managing director, and Mr. R. A. Rust, general manager of the new division. Representatives from Joy International, the export organization of the Joy companies, were also present. Discussions covered the whole range of Joy products, special mention being made of a new Longwall Miner at present undergoing trials in a British colliery. The results, so far, have proved highly successful.

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The new address of the Technical Map Service is General Mining Arcade, 17 Simmonds Street, Johannesburg, South Africa.

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A new branch of the Chartered Bank has been opened at Simanggang in Sarawak.

★

On June 26, 1959, the new factory of Anderson Boyes & Co. Ltd. at Glenrothes, Fife, was opened by the Secretary of State for Scotland, the Rt. Hon. John S. Maclay, C.M.G., M.P. The new factory, which covers approximately 65,000 sq. ft., is being devoted to the production of jibs and cutting chains for A.B. coalcutters and at present employs 70 people. By December, 1959, the total works force will be approximately 120 and it will then be built up gradually to a maximum of approximately 240. Since the turn of the century Anderson Boyes & Co. Ltd. have been pioneers in the development of coalcutters, power loaders and gate-end boxes. This year they celebrate their 60th anniversary.

PERSONAL

Mr. L. H. Cooper has relinquished his positions as chairman and director of the Mond Nickel Co. and Henry Wiggin & Co. Mr. G. Archer becomes chairman of Mond and Wiggin, succeeding Mr. Cooper in these capacities. Three managing directors of Mond are appointed, namely: Mr. I. A. Bailey (Operations), Dr. L. B. Pfeil (Research and Technical) and Mr. J. O. Hitchcock (Commercial). Mr. Bailey continues as managing director of Wiggin and Messrs. Pfeil and Hitchcock as directors of that company.

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Mr. Percy M. Holman has been elected chairman of Holman Brothers Ltd. in place of the late Mr. A. T. Holman.

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Dr. W. J. Busschau has been elected president of the Transvaal and Orange Free State Chamber of Mines for 1959-60.

★

Mr. R. F. Lethbridge has been appointed a director of the Compania Espanola de Minas de Rio Tinto S.A. in succession to the late Mr. L. C. Hill. Mr. Lethbridge is head of the Technical Division of Rio Tinto, London. When the Rio Tinto Mines in S.W. Spain were sold to the newly-formed Spanish company in 1954, Rio Tinto, London, retained a one-third interest and since then has provided certain technical and commercial services outside Spain.

Metals and Minerals

I. C. I. Links Up with Alcoa

Not the least significant consequence of the recent recession in the aluminium industry has been the growing attention which leading U.S. producers are now devoting to the development of selling outlets in other countries. This desire for increased participation in the activities of the aluminium industry overseas—more especially in the United Kingdom—was reflected earlier this year in the keen competition between Alcoa and Reynolds for control of the British Aluminium Co. Victory, on that occasion, went to Reynolds. It was not to be expected, however, that Alcoa—the world's largest aluminium producer—would readily abandon the British market to rival firms, and its ripost has not been long delayed. By linking up with Imperial Chemical Industries, Alcoa has obtained a foothold with which it can be well satisfied.

The agreement provides for the formation of a holding company called Imperial Aluminium (Impalco), at a valuation which will probably be in the region of £10,000,000. I.C.I. will hold 51 per cent and Alcoa 49 per cent of Impalco's capital. I.C.I. will appoint three of the five directors, including the chairman—Dr. John Taylor of I.C.I. Metals and Explosives Divisions—and the managing director, Mr. Berkeley Villiers of the Metals Division. Irrespective of future expansion, control will thus remain in British hands, and it is noteworthy that Treasury Consent was forthcoming within 24 hours.

I.C.I.'s Metals Division, which has 20 years of experience in the manufacture of wrought aluminium products, built and operated a plant at Waunarlwydd, near Swansea, for the British Government during World War II. After the war the company purchased the plant, which has recently been expanded and modernized at a cost of several million pounds. Present capacity is in the region of 20,000 - 30,000 tons of semi-fabricated products annually and an adjacent site of 200 acres is available for future expansion. This plant is to be handed over to Impalco as I.C.I.'s contribution towards its capital. A small number of Alcoa technicians will be seconded to Waunarlwydd. The new company will start operations on August 1 this year and initially its production will be sold through the existing I.C.I. sales office.

In the words of Mr. Frank L. Magee, president of Alcoa, the link-up brings together Alcoa's seventy years of acquired research and developmental experience in the highly specialized fields of aluminium production and fabrication, and I.C.I.'s own extensive background and facilities for the manufacture of non-ferrous metals generally. It provides the American company with direct access to the British market and with a selling organization which is world-wide. I.C.I. on its part, besides benefiting from Alcoa's technical resources and know-how, gains an assured supply of primary metal, since Alcoa would scarcely allow its new partner to "go short". Indeed, it seems by no means improbable that the British company might eventually acquire an interest in the production of virgin metal, having regard to the ambitious long-term thinking on which the partnership is clearly based.

At present Waunarlwydd's output of semi-manufacturered products accounts for only some 7 to 8 per cent of the U.K. market of 300,000 tons a year, against roughly a quarter for the Reynolds-T.I. group and over a fifth for Northern Aluminium. In Britain, however, the consumption of aluminium per head of the population is still barely half that of the U.S. figure of 21 per cent, and in nearly all other countries it is lower still. At present consumer durables account for only 7 per cent of U.K. aluminium consumption, compared with double that proportion in the U.S., while building and construction take only a third as much proportionally as in the latter country. Thus, ample scope for expansion exists. Moreover, American consumption appears to be on the threshhold of a spectacular advance, based very largely on the development of new uses which may be expected to spread in due course to Britain and elsewhere.

The I.C.I.-Alcoa link-up clearly signifies the determination of both companies to take maximum advantage of the enormous potential for market development which exists outside the U.S. It will be surprising if the new partnership does not ultimately secure the largest share of this expanding but highly competitive trade.

LITHIUM'S PROMISING LONG-TERM PROSPECTS

The long-term outlook for lithium is discussed by Mr. A. Chester Beatty in his statement to shareholders of Selection Trust. Referring to plans which were made for placing the Bikita property in Southern Rhodesia on a care and maintenance basis early in 1960, Mr. Beatty said that this decision had been taken as a result of a change in trading conditions.

Bikita Minerals was developed and equipped as a large-scale lithium-mining operation which, for the first five years, would devote the major part of its production to a contract with American Lithium Chemicals, which in turn had a contract to supply the U.S. Atomic Energy Commission with lithium hydroxide. These contracts expire at the end of 1960 and it is not now expected that they will be renewed. Thereafter Bikita Minerals' sales may be confined to the supply of high-grade ores to glassmakers. After stocks of saleable-grade products have been built up to a level which will ensure continuity of supply to glassmakers and other consumers for at least five years, the mine will be placed on a care and maintenance basis until the market situation improves.

The deposit at Bikita contains three metals—lithium, beryllium and caesium. It is the largest known beryl deposit in the world. Mr. Beatty points out that, now that there is a known source of ample supplies of these metals, interest in the development of new uses for them is likely to be stimulated, and they each may have a promising future. He expressed himself as therefore still hopeful about the long-term prospects for the company.

LONDON METAL AND ORE PRICES

Due to extreme pressure on space arising from the dispute in the printing industry, we have no alternative but to suspend publication of our usual table of London Metal and Ore Prices, which will be resumed as soon as circumstances permit. Meanwhile any changes in metal or ore prices will be reported each week in *Metals and Minerals*. The following prices, as quoted on July 2, 1959, have changed during the past week :

Gold 249s. 9¼d., imported platinum £26½ - £27½, quicksilver £75 ex-warehouse, and wolfram and scheelite (65 per cent), 95s. - 100s. per unit c.i.f.

COPPER · TIN · LEAD · ZINC

(From Our London Metal Exchange Correspondent)

The past week has witnessed a further decline in world copper prices, whilst the tin and zinc markets have maintained a firm tone and moved higher. As the holiday season approaches new business has been inclined to ease off but in spite of this there has been a satisfactory volume of trade passing through the Exchange.

U.S. FABRICATOR'S COPPER STOCKS NEAR 475,000 TONS

A variety of factors have influenced the copper market during the period under review. Firstly, world production has increased to record levels and it seems likely that barring a prolonged strike, output during the current year may exceed consumption by more than some 200,000 tons. Recent figures point to steadily increasing stocks both outside and within the U.S. where fabricator's stocks at the end of May reached a record 474,657 tons, an increase of 11,075 tons over April comparing with a low of 399,113 tons last year. In spite of this, the consumption figure for May, based on shipments of fabricated products, showed an increase over April of only about 3,000 tons at 123,510 tons. Secondly, reports concerning American stockpiling policy have disturbed the market as the Senate has accepted a recommendation for the disposal of certain surplus materials and the possibility has been taken into consideration that similar action might be taken before long in the case of copper. Finally, the latest developments in the current labour contract negotiations in the U.S. non-ferrous and steel industries indicate that an early and complete stoppage will be avoided. Meanwhile the result of the strike authorization ballot is awaited but even if it goes in favour of such action, it will only mean that the Union authorities will have the necessary power to call a strike if they consider it necessary at a later date.

As far as London is concerned, copper closed last week on an easier note to touch the lowest price this year, and although the market remains hesitant a moderate recovery has taken place initiated by a certain amount of interest at the lower level from Russian sources. In the U.S. the poor demand for customs smelter metal resulted in a reduction of their price in three ½ c. stages to 30 c., but business is still quiet and their buying price for No. 2 Scrap has been shaded 1 c. to 24 c. Dealers are offering at 29½ c

but buying interest has been negligible. The producer price, however, has been maintained at 31½ c. with July sales less active than June. But this quotation will undoubtedly come under increased pressure if no major strike develops. The Belgian price has also come down during the week to 28½ c. New York - Antwerp. Stocks in U.K. official warehouses last week showed little change and declined 25 tons.

B.O.T. COMPLETING TIN SALES IN 1960

The Board of Trade has announced that disposal of the initial 2,500 tons of tin, which it had previously stated would be sold from its strategic reserve, will be made through the Buffer Stock Manager. An additional 2,500 tons to complete liquidation of the stockpile will be disposed of after January 1, 1960, and in this case the method to be adopted will not be decided until nearer the time. This latter part of their announcement complies with the International Tin Agreement requirement that 6 months' notice must be given before any signatory can dispose of any non-commercial stocks. In view of the overall world consumption-supply picture this additional quantity is negligible and the market was able to take it in its stride. Meanwhile, demand from both U.S. and the Continent remains fully satisfactory and the outlook remains encouraging, although a temporary setback might result from a prolonged U.S. steel strike. Tin consumption there increased during April to 7,755 tons, the highest since January, 1957. U. S. official warehouse stocks decreased sharply last week by some 394 tons to 7,587 tons.

On Thursday morning the Eastern price was equivalent to £818⅛ per ton c.i.f. Europe.

LEAD STEADY ; ZINC "BACK" CONTINUES

During the week demand for lead has shown a slight improvement with continued interest in London for nearby delivery metal. In the U.S. the active buying of recent months has resulted in a fall of 26,246 tons in the stocks at the end of May to the lowest figure since October, 1958, when the figure was 169,435 tons. Zinc continues in good demand and the postponement of the steel strike has helped sentiment. Special high grade is sought after and reports indicate a tightening in supplies. In London, nearby metal is not too plentiful and the backwardation has been maintained at recent levels. It remains to be seen whether the higher prices now established will bring about any increase in supplies.

Closing prices up to midday, July 2, are as follows :

	June 25		July 2	
	Buyers	*Sellers*	*Buyers*	*Sellers*
COPPER				
Cash	£220½	£220¾	£220¾	£221
Three months ..	£221½	£222	£221½	£221¾
Settlement ..	£220¾		£221	
Week's turnover	11,125 tons		11,775 tons	
LEAD				
Current ½ month	£69⅛	£69⅜	£69⅛	£69⅜
Three months ..	£71⅛	£71⅜	£70⅞	£70⅞
Week's turnover	6,425 tons		5,100 tons	
TIN				
Cash	£790	£791	£790½	£791
Three months ..	£791½	£792	£792½	£793
Settlement ..	£791		£791	
Week's turnover	460 tons		565 tons	
ZINC				
Current ½ month	£79⅝	£79¾	£80⅛	£80¼
Three months ..	£78⅛	£78¼	£79	£79⅛
Week's turnover	7,050 tons		6,000 tons	

Mining Finance

Life in the Old Mines Yet

The glamour which has surrounded the O.F.S. and Klerksdorp gold fields since their inception has tended to overshadow the solid foundation of the industry represented by the older mines of the Witwatersrand. Yet these mines produce 44 per cent of the Union's gold output, compared with 31 per cent from the Far West Rand and 25 per cent from the O.F.S. Even in the newer field of uranium mining, the "old Rand" produces only slightly less than the Far West Rand, and considerably more than the O.F.S., the respective figures being 39 per cent, 42 per cent, and 19 per cent.

Certainly, neither a glance at the "most active shares" list nor an analysis of the mining columns of the financial press would give any idea of the importance of the old mines within the industry, and, indeed, within the economic structure of the Union. The reason, of course, is that failing an increase in the price of gold in the comparatively near future, costs at the old mines form such a high proportion of revenue that in many cases only a small increase in expenditure would result in unprofitable working. In these circumstances, unforeseen mishaps, only too common at the great depths which old mines have reached, can wipe out a year's profits.

Until the gold price is raised, the battle against declining margins can only be fought on the field of costs. But as Mr. P. H. Anderson pointed out in his presidential address to the Transvaal and O.F.S. Chamber of Mines last Monday, not all costs are under the control of the industry. Prices of materials and equipment are obviously determined by the overall market for these products, and at times when the remainder of the mining industry is enjoying buoyant conditions, the old gold producers are bidding in a very high-powered market. Much the same comment applies to labour, except that here the gold industry is competing with secondary industry.

The industry's main hope, therefore, must be higher productivity, and there is evidence of successful efforts in this direction in the recent slowing down of the upward trend of costs (though the recession has, of course, contributed to this). If costs can be firmly controlled, such mines as Durban Deep and East Geduld might well regain the investment status that they have lacked for ten or more years.

PLATINUM DIVIDENDS SHOULD RESTART

If current conditions in the platinum market continue, Rustenburg Platinum should have surplus funds for dividends and other appropriations at August 31, the financial year-end. This was stated in an announcement from Rustenburg, the producing company, issued early this week.

The improved position results from the upturn in platinum prices demand which occurred last February. This has enabled the company to reduce its heavy stock position and also to repay the Standard Bank's £1,000,000 loan, raised to finance Rustenburg's deficit at the end of the 1957-8 financial year.

BISICHI AND EX-LANDS SHOW FAITH

Not surprisingly, output restriction reduced the net profits of both Bisichi Tin and Ex-Lands Nigeria in 1958. It was, therefore, a pleasant surprise that both dividends were eminently satisfactory, that of Ex-Lands being maintained at 15 per cent, and that of Bisichi actually being raised from 10 to 15 per cent.

The boards' reasons for these good

LONDON MARKET HIGHLIGHTS

The usual end-Account influences coupled with a certain amount of selling resulting from the exercise of call options subdued the South African gold share market at the beginning of the week. But the undertone remained firm enough with a selective demand making itself apparent from time to time. Shares of the older dividend-paying mines edged ahead, the recently sought after City Deep rising to 23s. 3d.

Hopes connected with the June monthly profit returns and the June quarterly reports were also making themselves felt. Anticipations of good monthly profits were fully confirmed later when despite a little changed gold price, the mines were able to announce a fresh batch of record profit figures for June. Outstanding among them was the latest striking advance in earnings of Western Holdings and the shares, already firm on expectations of further high gold values to be announced in the quarterly report, bounded to 175s. The recent Cape demand for St. Helena (69s.) was justified by a sharply higher peak profit and a good advance in earnings was also recorded by President Brand which moved up to 69s. 6d. A certain amount of switching out of Hartebeest (64s. 6d. xd) into Buffelsfontein (54s. xd) was thought to reflect a coming optimistic quarterly from the latter mine.

Finance and Diamond shares strengthened. A revival in the Platinum group was touched off by the official forecast of a resumption of dividends by the Rustenburg Company. "Pots" improved to 9s.

Copper shares looked a little weak at one time on the continued dullness of the metal price, but perked up towards mid-week. Some Cape buying was again seen and sharp rises occurred in Chartered (93s. 9d.) and Nchanga (12 5/16). Even Bancroft which had been notably weak at around 23s. began to improve. A sudden jump to 15s. 3d. in Rhodesia-Katanga followed talk of a coming statement about the re-opening of the Kansanshi mine ; but there was no knowledge of an imminent announcement in official quarters.

In the miscellaneous sections, Hampton Gold Areas remained a lively spot on "shell" talk and the shares jumped to 1s. 8¼d. in particularly brisk trading. Yukon held firm at 7s. while awaiting the outcome of the 8s. 6d. a share bid approach.

distributions might be summarized as faith in the two metals produced, tin and columbium. At the present time, of course, it is a lot easier to have faith in tin than it was, say, eighteen months ago. Columbium, however, is a different matter. Memories are still too strong of the remarkable slump in this metal following the artificial stimulus give by stockpile contracts at greatly inflated prices. More recently, however, demand for columbite has been steadily improving, and Bisichi, whose product is both free from impurities and has a high Niobium/Tantalum ratio, has had no trouble, has been able to sell profitably all its production for 1959 and some for 1960.

At current prices, Bisichi yields over 9 per cent, and Ex-Lands, which produces tin only, over 13 per cent. Both could prove profitable on a medium view.

Restriction hits Malaysiam.—Largely as a result of output restriction, Malaysiam Tin made a loss of £385 before tax in the year to March 31 last, compared with a profit of £6,421 in the preceding year. No dividend is recommended. Meeting, July 22.

Better Year for Mason and Barry.—A net profit after tax of £16,349 was the result of 1958 operations at the San Domingos Mine by Mason and Barry. This compares with a loss of £46,500 in 1957. The dividend is again passed; Meeting, July 16.

Gold Fields bid for Anglo-French.—In a note under this heading last week it was stated that Gold Fields' offer for Anglo-French stock units put a value of 33s. 6d. on the latter. This should have read 38s. 6d.

Coming Events

H.R.H. Prince Philip, Duke of Edinburgh, has graciously consented to become Patron of the 13th Congress of the International Scientific Film Association to be held in London and Oxford from September 23 to October 2, 1959. The Congress will also include a Festival of Popular Science Films, open to the public and presenting top documentaries from all over the world.

More than thirty countries are expected to participate with films, and the attendance of representatives. The Congress is being arranged on behalf of the International Scientific Film Association, by the Scientific Film Association of Great Britain.

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The Twelfth International Congress of Scientific Management is being held in Sydney and Melbourne, Australia, during February and March, 1960.

Obituary

The directors of Lee Howl and Co. Ltd., pump manufacturers of Tipton, Staffs., regret to announce the death earlier this year of Mr. B. H. Wright, formerly London manager of the company. He was over 80. Mr. Wright, who lived in Ashtead, Surrey, was London manager for some fifty years, and he will be remembered all over southern England by his many business friends. Mr. W. N. Webb is now London manager at the London (Finchley) office.

BISICHI TIN CO. (NIGERIA), LTD.

The forty-eighth annual general meeting of Bisichi Tin Company (Nigeria) Ltd., was held on June 25 in London. **Mr. W. J. C. Richards,** Chairman, presided.

The following is an extract from his Statement circulated with the Report and Accounts for the year ended December 31, 1958 :—

The value of Fixed Assets after having written off £40,474 for Depreciation is £637,201, which is £30,655 less than the previous year. During the year only £9,819 was spent on plant.

The average prices received per ton of concentrates were £538 for tin and £591 for columbite. Shipments of tin and columbite aggregated 692 tons against 871 tons the year before. The Revenue dropped from £495,518 to £356,799. Mine expenditure was reduced from £264,479 to £168,411.

The Net Profit for the year is £46,639, from which it is proposed to pay a dividend of 15 per cent, against 10 per cent last year, which will take £44,676. Your Directors consider this liberal distribution of current profits justified. Their faith in the future for columbite is being proved and we have sold profitably all the production of columbite in sight for 1959 and some for 1960. Bisichi's columbite is asked for owing to its freedom from impurities and its high Niobium/Tantalum ratio. The outlook for tin is more favourable than it has been since regulation was introduced and your Company is essentially a cheap producer.

The report and accounts were adopted.

EX-LANDS NIGERIA, LTD.

The forty-seventh annual general meeting of Ex-Lands Nigeria Ltd., was held on June 25 in London. **Mr. A. Hedley Williams, M.I.M.M., M.Inst.Pet.,** (Chairman) presided.

The following is an extract from the Statement of the Chairman, circulated with the Report and Accounts for the year ended December 31, 1958 :—

During a visit I paid to the Company's properties in Nigeria in September/October last, I was considerably impressed by the exceptionally intelligent and efficient policy and methods of operation which our General Manager, Mr. C. W. Hooper, had put into force following tin restriction. It was plain that not only would these plans counteract some of the blow of tin restriction but also allowed for efficient full scale working to be resumed without undue delay. The fact that despite drastically reduced output, working costs were only £234 per ton f.o.r. compared with £263 per ton f.o.r. for 1957, is decided confirmation of the foregoing views.

Current changed conditions lead the Board to take a more favourable view for the future of tin, and although a 15 per cent dividend has not been fully earned during the year under review, the Board feel justified in maintaining the distribution at this figure as a mark of their confidence in the future.

It might be recorded that we have locked up with the Buffer Pool tin to the value of £46,887. Against this we had a loan from the Nigerian Government to an amount of £20,294.

The report and accounts were adopted.

GENERAL EXPLORATION ORANGE FREE STATE, LTD.

(Incorporated in the Union of South Africa)

At the Thirteenth Annual General Meeting of General Exploration Orange Free State Ltd. held in Johannesburg on June 23, 1959, the Chairman stated :

This is the Thirteenth Annual General Meeting of your Company and I submit for your approval and adoption the Directors' Report and Accounts for the year ended December 31, 1958.

The conversion of the previous adverse balance on Income and Expenditure Account into a small credit balance of £1,352, the transfer from General Reserve of £8,214 for the purposes of writing down an investment to market value at December 31, 1958, the maintenance of the large cash resources at £802,953 and the increase in the total market value of investments at December 31, 1958, as compared with the previous year, comprise the main features of the Accounts. The market conditions since the year end have continued to improve and at present the total market value of your Company's investments amounts to £685,956 as compared with £499,569 as at December 31 last.

The most salient features, as affecting your Company, of the latest available information on Loraine Gold Mines Limited as revealed by the Chairman at the Annual General Meeting held on April 13 are contained in the Directors' Report. It will be noted that since January 31, 1959, the sinking of Riebeeck No. 1 shaft, now renamed No. 3 shaft advanced by 678 feet to a depth of 3,807 feet as at April 10 last. It is anticipated that the sinking of this shaft should be completed by December, 1959, and production from the shaft area should commence early in 1961. I would remind stockholders that in terms of the Riebeeck flotation agreement (now taken over by Loraine Gold Mines Limited) at least 40,000 ft. of development on the Upper Reefs from this shaft, excluding stations, cross-cuts and other development mentioned in the agreement, must be accomplished before it is determined whether a satisfactory mine, as defined therein, exists in these Upper Reef horizons. Should a satisfactory mine be established, the rights to deal with the Lower Reefs would then devolve upon your Company and its participants.

Although up to the date of publication of the Report and Accounts there had been no change in the holdings of your Company's mineral and participation rights, since that date your Company has been offered and has accepted a 25 per cent participation, both as to benefits and costs, with General Mining & Finance Corporation Limited in the investigation of two areas totalling approximately 70,000 morgen in the Orange Free State.

The Proprietors of Patent No. 709142 for "Improvements in or relating to Electric Detonators for Blasting and Like Purposes," desire to secure commercial exploitation by Licence in the United Kingdom. Replies to HASELTINE LAKE & Co., 28, Southampton Buildings, Chancery Lane, London, W.C.2.

Machinery and Equipment

New Rock Drill Cuts South African Mining Costs

Designed to cut mining costs on high speed development and shaft sinking, the new Atlas Copco Jet rock drill has recently achieved marked success on Transvaal and O.F.S. gold mines, where over 250 Jet drills are now in operation. Specially developed for South African conditions, this is a powerful, high-speed, 3 in. heavy-duty drill designed to achieve operational economies in either short-hole or deep-hole drilling.

Because of its power to weight ratio and speed of action, the drill is capable of a 30 to 40 per cent increase on previous drilling results, and can be operated by one man and not two per 3 in. machine, as is usual with this type of drill. Equipped with an improved retractable pusher leg when used as a drifter, or fitted with a tee-handle and front head weight for shaft sinking, the new drill is 15 to 20 lb. lighter than comparable 3 in. drills, and only 3 lb. heavier when fitted with pusher leg attachment than are the standard $2\frac{5}{8}$ in. combination drills.

Recent drilling operations on Free State and Far West Rand mines confirm the efficiency of operation of the new rock drill. Exclusive features include a new double opening direct-flow valve which combines heavy impact and increased drilling capacity with economy of compressed air and smooth, vibrationless running. One hand finger-tip control is obtained by the close grouping of all control levers and throttles on the back head.

Additional operation efficiency is obtained by the use of only one air hose and one water hose on each machine. The Jet is the first pusher leg drill with controls placed for drifting.

Appreciable time-saving is effected by the improvement in the design of the retractable air leg, which enables quicker repositioning of the leg during continuous drilling and reduces the number of steel changes, thereby increasing drilling footage per man-shift. In drilling top holes, the operation of the air leg facilitates more frequent changes of position to maintain the optimum feed angle and feed pressure. The improved feed pressure also makes it easier to handle in broken ground.

Two Atlas Copco BBX65 Jet rock drills in action in a development end on a Far West Rand gold mine. Over 200 of these drills are already being used in the Transvaal and Orange Free State goldfields

MINERAL-INSULATED THERMOCOUPLES

British Insulated Callender's Cables Ltd., who have for some time been manufacturing mineral insulated cables, are now applying the principle of mineral insulation to thermocouple production. The thermocouples consist of two dissimilar thermo-electric conductors, welded together at a point (the hot junction), embedded in highly compressed magnesium oxide insulant, and completely encased in a seamless, circular, stainless-steel sheath.

When heat is applied to the hot end, a small voltage is generated and detected, via a compensating lead, by a suitable measuring device. This voltage is proportional to the temperature causing it, and thus the meter can be calibrated to provide a direct temperature reading.

The positive conductor is of nickel-chromium alloy and the negative conductor of nickel-aluminium alloy. They are available in standard overall diameter sizes of 0.122 in. and 0.060 in., but intermediate sizes are also available.

In the standard hot junction the conductors are welded together, and the sheath is welded over to form a hermetic seal completely insulated from the conductors. This does not increase the overall diameter of the cable or make installation any more difficult. For the first time, thermocouples of all sizes down to 0.060 in. dia. can be supplied with an insulated junction. At the other end, the cold end, a seal is fitted to prevent the insulant from absorbing moisture.

PORTABLE CABLE TEST SET

The Calidec cable test set (Type MB) (patent applied for) is a portable battery-operated instrument for testing all types of wiring installations for earth leaks up to 3 megohms, also for continuity tests. The indication of an earth leak or an open circuit is given both audibly and visually with a bell and indicator lamp, tests for both earth leak and open circuit are carried out at the same time, as there are two sets of bells and lamps. A glance at the instrument quickly determines the fault being indicated.

A voltage of 90 v. is applied to the circuit under test through a high value resistance, thus ensuring the highest possible voltage at the highest ohmic value leak. The circuit in the instrument uses a thermionic valve and two high resistance relays. Warming-up time of the instrument is under 3 seconds, as it is operated from batteries. The batteries used are of the popular range used in battery portable radio receivers.

The advantages of the Calidec cable test set are numerous; its operation being so simple once the three leads have been connected (one earth, two for the circuit under test). It can be operated with one hand, which has a big advantage over other types of instruments for use in confined spaces. Size of the instrument is $10\frac{1}{4}$ in. long, $6\frac{7}{8}$ in. wide, $7\frac{1}{2}$ in. high. Weight with batteries is 9 lb.

SELECTION TRUST

Mining Exploration and Finance

RESULTS FOR YEAR ENDED 31st MARCH, 1959

	£	(1958) £
Revenue, less expenses, of the Company and its Subsidiaries was	3,304,095	*3,133,192*
Taxation amounted to	1,591,323	*1,626,962*
leaving	£1,712,772	*£1,506,230*
which has been applied as follows :—	£	£
Transfers to Reserves and increase in Unappropriated Profits	590,960	*435,523*
Preference Dividends, net	25,875	*25,875*
Ordinary Dividends (7s. per stock unit), net	1,095,937	*1,044,832*
	£1,712,772	*£1,506,230*

Exploration Reserve was charged with Exploration Expenditure amounting to £271,735 (*1958—£208,518*) and Investment Reserve was credited with £53,925 recovery in the value of Investments previously written down (*1958—depreciation £53,439*).

CONSOLIDATED FINANCIAL POSITION

Capital and Reserves	£	£
Issued Capital, 5,191,711 stock units of 10s.	2,595,856	*2,595,856*
Reserves and Unappropriated Profits	4,427,461	*4,045,390*
Outside Interests in Subsidiaries	1,223,193	*1,217,690*
Debenture Stock outstanding	131,279	*133,474*
	£8,377,789	*£7,992,410*
Assets	£	£
Quoted Investments at book value	4,715,484	*4,222,464*
Unquoted Investments at book value	1,079,575	*1,407,817*
Net Current Assets	2,408,085	*2,233,966*
Freehold Property and other assets	174,645	*128,163*
	£8,377,789	*£7,992,410*

The quoted investments appearing at £4,715,484 had a market value on the basis of Stock Exchange prices at 31st March, 1959, of £26,083,149.

The unquoted investments appearing at £1,079,575 included the holding in Tsumeb Corporation, which stands in the books at £35,639 but which, valued on an arbitrary basis, is worth about £4,000,000.

INVESTMENTS

Selection Trust and its Subsidiaries are principally interested, directly and indirectly, in the following companies :—

American Metal Climax
Bikita Minerals
Chibuluma Mines
Consolidated African Selection Trust
Mufulira Copper Mines
Rhodesian Selection Trust
Roan Antelope Copper Mines
Sierra Leone Selection Trust
Trepca Mines
Tsumeb Corporation
Vaal Reefs Exploration and Mining Company
Western Decalta Petroleum
Western Holdings

EXPLORATION

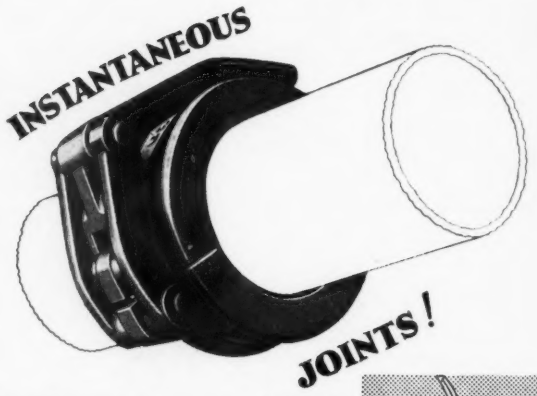
The principal exploration activities are centred in Canada and Africa and conducted mainly by two Subsidiaries :—

Selco Exploration Company Ltd., Suite 600, 77, York Street, Toronto.

African Selection Trust (Pty.) Ltd., 733, " Libertas ", 62, Marshall Street, Johannesburg.

Copies of the Annual Report for the year ended 31st March, 1959, may be obtained at the Company's Transfer Office at 26 & 27, WHITE STREET, MOORFIELDS, LONDON, E.C.2.

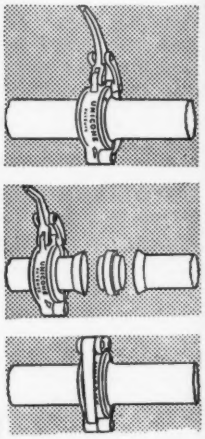
The Annual General Meeting of Selection Trust Limited will be held at 12 noon on 30th July, 1959, at SELECTION TRUST BUILDING, MASON'S AVENUE, LONDON, E.C.2.



A perfect seal in a matter of seconds

For temporary pipelines 'Unicone' instantaneous joints are recommended. Comprising two parts only, they fasten with a "snap" ensuring a perfect seal in a matter of seconds.

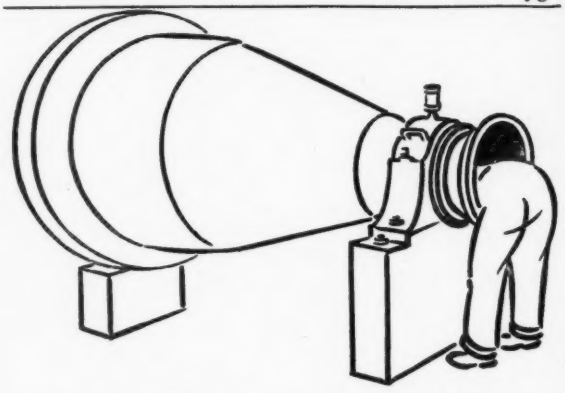
For permanent or semi-permanent pipelines 'Unicone' bolted-type joints are usually employed and can be assembled far more quickly than any flexible joint giving positive anchorage.



'UNICONE' REGD
Flexible joints for Pipelines

leakproof. safe. reliable

THE UNICONE CO. LTD., RUTHERGLEN, GLASGOW, SCOTLAND



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From 1 in. to 5 in. Diameter

★ GRIND FASTER ★ NEVER BREAK
★ LAST LONGER ★ NEVER LOSE SHAPE
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